50/Bet
Declaration
4-15-03
D Bell

00684.003135.1 (684.3135 CI) PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	:	Examiner: J. Phan
MANABU KATO	)	
	:	Group Art Unit: 2872
Appln. No.: 08/951,635	)	
	:	
Filed: October 17, 1997	)	
	:	
For: SCANNING OPTICAL APPARATUS	)	April 2, 2003

Commissioner for Patents
Washington, D.C. 20231

LETTER TRANSMITTING DECLARATION UNDER 37 C.F.R. § 1.132

Sir:

Applicant, having timely filed a response to the August 13, 2002, Official Action in the above-referenced application on February 13, 2003, is submitting herewith a Declaration Under 37 C.F.R. § 1.132 of Duncan T. Moore, in support of the patentability of the claims. Favorable consideration is earnestly solicited.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

Daniel Sheets

Attorney for Applicant

Registration No. 37,838

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200
DSG

DC_MAIN 128610 v 1

00684.003135.1 (684.3135 CI) PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	:	Examiner: J. Phan
MANABU KATO	)	
	:	Group Art Unit: 2872
Appln. No.: 08/951,635	)	
	:	
Filed: October 17, 1997	)	
	:	
For: SCANNING OPTICAL APPARATUS	)	
	:	

Commissioner for Patents
Washington, D.C. 20231

DECLARATION UNDER 37 C.F.R. § 1.132 OF DUNCAN T. MOORE

Sir:

I, Duncan T. Moore, hereby declare:

Introduction and qualifications

1. I am the Rudolf and Hilda Kingslake Professor of Optical Engineering at The Institute of Optics, University of Rochester, Rochester, NY, a position I have held since 1993.

2. I have been a professor at The Institute of Optics since 1974, serving as an Assistant Professor from 1974 to 1978, as an Associate Professor from 1978 to 1986, and as a full professor since 1986.

3. In addition, I have served as the Dean for the School of Engineering and Applied Sciences (1995-97) and Director of The Institute of Optics (1987-93), all at the University of Rochester.

4. I am also the CEO and President of Infotonics Technology Center in Canandaigua, NY, a tax exempt corporation founded by Eastman Kodak, Corning Inc., and Xerox, and also funded by New York State and the federal government.

5. I received a Ph.D. in Optics and a M.S. in Optics from the University of Rochester, and a B.A. in Physics from the University of Maine, Orono, Maine.

6. I am the Founder and was the President of Gradient Lens Corporation, Rochester, NY, a company that manufactures borescopes using gradient-index lenses.

7. From December 1997 through December 2000, I served as Associate Director of Technology, Office of Science and Technology, The White House.

8. From January 2001 through May 2001, I served as a Special Advisor to the Acting Director, Office of Science and Technology Policy, Executive Office of the President, The White House, Washington, DC.

9. In 1998, I was elected to membership in the National Academy of Engineering. The National Academy of Engineering is one of the three honorific scientific societies in the United States (the others are the National Academy of Science and the Institute of Medicine).

10. Over the last 30 years, I have either authored or co-authored over 80 technical papers relating to optical technology.

11. I have also served as the editor of Applied Optics, a journal of the Optical Society of America.

12. And I have been a presenter at numerous optical technology conferences.

13. In 1996, I served as the President of the Optical Society of America, a 12,000 member professional society.

14. I am a named inventor of 12 U.S. Patents relating to optical technology.

15. Additional information regarding my background, qualifications, and experience are set forth in my *curriculum vitae*, which is attached hereto at Tab 1.

Materials reviewed in connection with declaration

16. In connection with this declaration, I reviewed the following materials:

(a) Claims 61, 62, and 70, as set forth in the Claim Sheet at Tab 2, which I understand are pending in the subject application;

(b) The Official Action dated August 13, 2002, in the subject application, a copy of which is attached at Tab 3;

(c) U.S. Patent No. 5,418,639 (Yamazaki), a copy of which is attached at Tab 4; and

(d) McGraw Hill Dictionary of Scientific and Technical Terms, 5th Ed. (1994), p. 1535, left col., a copy of which is attached as Tab 5.

The understanding of the artisan of September 6, 1994

17. Unless stated otherwise, each statement herein, including those made in the first person, constitutes the understanding of one having ordinary skill in the art as of September 6, 1994.

Claim 61

18. Turning to the claims, Claim 61 recites an imaging lens for use in an optical scanner, wherein the curvatures in a sub-scanning direction of two of the surfaces of the imaging lens vary continuously along a main scanning direction over the effective area of the imaging lens and independently of the curvatures in the main scanning direction, and wherein the curvatures in the main and sub-scanning directions are non-symmetrical with respect to the optical axis. (See Tab 2, Claim Sheet, p. 1.)

19. Yamazaki fails to show the above-discussed feature.

20. The Official Action states that the equation

$$rh(\pm) = r_0 + (1 + k(\pm) \cdot Rp \cdot \alpha / n) \cdot R \cdot [1 - \cos\{\sin^{-1}(h / R)\}]$$

in Yamazaki (where rh is the radius of curvature in the secondary scanning direction, and R is the radius of curvature in the primary scanning direction at the optical axis) teaches the "independently" feature underlined above. (See Tab 3, Official Action, p. 2; Tab 4, Yamazaki, col. 8, line 53 through col. 10, line 4.)

21. I respectfully disagree because in this equation, the radius of curvature in the secondary scanning direction (i.e., rh) is a function of and thus depends upon the radius of curvature in the primary scanning direction at the optical axis (i.e., R).

22. So this equation does not teach the "independent" feature.

23. The Official Action also makes reference to col. 8 of Yamazaki which states that:

> "a cylindrical, toric, symmetrical or deformed cylindrical surface may be included in this optical scanning system, and a plurality of non-symmetrical

surfaces with respect to the optical axis may be included. Further, a plurality of non-symmetrical surfaces with respect to the optical axis may be utilized." See Tab 4, Yamazaki, col. 8, lines 16 through 22.

24. But even if these surfaces were included in the optical scanning system of Yamazaki, such would not constitute a teaching of the above-discussed features of Claim 61.

25. In more detail, a cylindrical surface or a toric surface would not meet the "vary continuously" language of the claim; so including either of those surfaces would not meet the claim language.

26. And if instead one were to include with the disclosed non-symmetrical surface either a second such surface or a deformed cylindrical surface, such would also not result in a teaching of the two surfaces claimed.

Claim 62

27. Claim 62 recites all the features of Claim 61, and further requires that the optical magnification of the imaging lens in the sub-scanning direction is constant over the effective scanning region (hereinafter the "constant magnification feature"). (See Tab 2, Claim Sheet, p. 1.)

28. However, Yamazaki is silent as to the constant magnification feature.

29. In more detail, the Official Action states that the equation "$k(+)-(k-)>0.005M^2$" in Yamazaki, where k(+) represents a coefficient on the "+" image height side, k(-) represents a coefficient on the "-" image height side, and M represents a lateral magnification in the secondary scanning direction of the optical scanning system

shows that the magnification is constant over the effective scanning region. (See Tab 3, Official Action, p. 3, lines 1-5; Tab 4, Yamazaki, col. 3, lines 60-64; col. 4, lines 34-43.)

30. I respectfully disagree because M is defined in Yamazaki as the lateral magnification (i.e., the ratio of the size of the image to that of the object in a direction perpendicular to the optical axis at a position close to the optical axis) in the secondary scanning direction. (See Tab 4, Yamazaki, col. 5, lines 63-64.)

31. Yamazaki says nothing about what the magnification in the secondary scanning direction is away from that position, i.e., elsewhere in the effective scanning region.

32. So Yamazaki does not teach that the magnification is constant over the effective scanning region as claimed.

33. I also understand that the Examiner has additionally directed Applicant's attention to col. 1, lines 60-65 of Yamazaki which states that "the fluctuation of the size of a spot of the secondary scanning direction is suppressed so that it can be maintained within a region of 10%". (See Tab 4, Yamazaki, col. 1, lines 60-65.)

34. This statement also fails to teach the constant magnification feature.

35. Yamazaki makes this statement in the context of explaining an equation which defines the allowable depth of focus, namely how accurately the surface upon which the image is to be formed must be positioned in the optical axis direction. (See Tab 4, Yamazaki, col. 1, line 50 through col. 2, line 18.)

36. In other words, the fluctuation of the size of a spot of the secondary scanning direction is intended to be maintained within a region of 10% by positioning in the optical axis direction the surface upon which the image is to be formed.

37. That has nothing to do with making the magnification constant over the effective scanning region as claimed.

Claim 70

38. Claim 70 recites all the features of Claim 61, and further requires, inter alia, that the imaging lens has a surface having a point of inflection in the main scanning direction. (See Tab 2, Claim Sheet, pp. 1-2.)

39. However, Yamazaki is silent as to such a point of inflection.

40. The Official Action states that a point of inflection would be "at the intersection of an optical axis and the lens surface". (See Tab 3, Official Action, p. 3.)

41. However, a point of inflection is where the curvature changes from concave to convex or convex to concave. (See Tab 5, McGraw Hill Dictionary of Scientific and Technical Terms, 5th Ed. (1994), p. 1535, left col.)

42. In Yamazaki, the curvature does not change from concave to convex or from convex to concave in the main scanning direction.

C nclusion

43. I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated: 4/1/03
(Month/Day/Year)

Duncan T. Moore